and October. Specimens collected during those months would probably contain embryos in various stages of development, the examination of which would undoubtedly lead to most interesting results.

The largest specimens I have seen of *Amblyopsis* are several males and females, each from four to four and a half inches in length, which seems to be about as large as the fish grows, though Dr. Günther mentions a specimen in the British Museum of five inches in length. The largest specimen captured of late years is said to have been taken during the summer of 1871, and sold for ten dollars to a person who was so desirous of securing the precious morsel that he had it cooked for his supper. The smallest specimen I have seen was one and nine-tenths inches in length.

F. W. PUTNAM

NOTES

ADDRESSES of sympathy with Dr. Hooker, in the difficult position in which he is placed with regard to the management of Kew Gardens, are flowing in on all sides, from those interested in the maintenance of Kew as a scientific establishment. At a meeting of the leading botanists and horticulturists held last week at the office of the *Gardener's Chronicle*, resolutions were unanimously passed expressing the sympathy of the meeting with Dr. Hooker, and in favour of an address to Mr. Gladstone, calling attention to the eminent services rendered by him to science, and pointing out that it is absolutely essential for the efficient management of the establishment at Kew that the Director must have complete control over the subordinate officials, free from any interference in matters of detail from his official superiors. The same course has been followed by the Council of the Royal Horticultural Society, and by its various committees. At a Council of the Royal Botanic Society, specially summoned for the purpose on Saturday last, similar resolutions were passed. The Council of the Meteorological Society has sent to Mr. Gladstone, Lord Derby, Sir John Lubbock, and Dr. Hooker, copies of a resolution in the same direction.

AN interesting *soirée* was held at the Royal Albert Hall on Thursday evening last, under the auspices of the Society of Telegraph Engineers, with the aid of the Postal Telegraph Department. A model of every kind of telegraph instrument which has been generally used for commercial purposes from the opening of telegraphs to the present time was exhibited. Each apparatus was connected up with wires proceeding from the central hall to the galleries, and thus the actual practical working of the telegraph system was made apparent to those present in a very effective manner. A descriptive lecture was at the same time given by Mr. W. H. Preece, of the Postal Telegraph Department, who lucidly explained the action of the electric current in producing the simple elementary signals. The admirable manner in which the lecturer made himself heard in every part of the vast assembly was a general subject of remark. The most interesting feature of the entertainment was the direct and instantaneous working with India. Kurrachee, the terminus of the Indo-European line in India, a distance of upwards of 5,000 miles, was the town selected, and, in reply to a message of inquiry, that station said, "Here, Kurrachee," and followed it up with the announcement that "locusts are swarming in Scinde." After the conversations held with India from the Albert Hall were concluded, the Grand Vizier of Persia, who was at Teheran, sent to the Albert Hall a warm message of congratulation to the Prince of Wales.

Les Mondes speaks with contempt and surprise of the treatment which science meets with at the hands of the British Government, referring particularly to the refusal of the latter to grant a sum for the purpose of enabling scientific men to make marine explorations on the coasts of Europe and India, and to the conduct of Mr. Ayrton towards Dr. Hooker. The latter is spoken of as a gentleman "eminent, talented, universally honoured for his integrity, loved for his courteous manner and the goodness of his heart, and who has devoted to the service of the State a life not only laborious but illustrious."

THE new French Association for the Advancement of Science intends to hold its first meeting at Bordeaux in the month of September next, commencing on the 5th.

WE are sorry to see the following paragraph in *Les Mondes* of July 18:—"No one has yet responded to the appeal we made to the French *savants* to take part in force (*en nombre*) in the Brighton meeting, which opens on August 14. We shall not organise this scientific excursion unless we are able to count upon a sufficient number of adherents. There is no time to lose." We hope it is not too late, and that something like a representative party may be yet organised from among all classes of French men of science. We are sure we can promise they will be heartily welcomed and hospitably treated at Brighton.

THE Annual Meeting of the British Medical Association will be held in Birmingham on the 6th, 7th, 8th, and 9th days of August next.

MR. W. A. TILDEN, D.Sc. Lond., Demonstrator of Practical Chemistry to the Pharmaceutical Society, has been appointed Chemical Master in Clifton College.

BY the provisions of the late Dr. William J. Walker's foundation, two prizes are annually offered by the Boston Society of Natural History for the best memoirs, written in the English language, on subjects proposed by a Committee appointed by the Council. For the best memoir presented, a prize of sixty dollars may be awarded; if, however, the memoir be one of marked merit, the amount may be increased, at the discretion of the Committee, to one hundred dollars. For the memoir next in value a sum not exceeding fifty dollars may be given; but neither of these prizes is to be awarded unless the papers under consideration are deemed of adequate merits. Memoirs offered in competition for these prizes must be forwarded on or before April 1, 1873, prepaid, and addressed, "Boston Society of Natural History, for the Committee on the Walker Prizes, Boston, Mass." Each memoir must be accompanied by a sealed envelope enclosing the author's name, and subscribed by a motto corresponding to one borne by the manuscript. The subject of the Annual Prize of 1873 will be "On the Development and Transformations of the Common House Fly."

THE Academy of Sciences and Belles Lettres of Caen has offered a prize of 4,000 francs for a paper on "The part played by leaves in vegetation." What is wanted is an account of exact experiments and new facts calculated to clear up, invalidate, confirm, or modify the doubtful points in the received theories. Papers must be sent in before December 31, 1875, addressed to M. Travers, secretary of the Academy, Caen.

ON Thursday last Mr. Thomas Baring, M.P., F.R.S., distributed prizes and certificates to the students who had passed the examinations connected with the educational courses of lectures delivered at the London Institution during the past session. In the examination on Prof. Huxley's lectures, "On the Physiology of Bodily Motion and Consciousness," the first prize was gained by H. B. Hyde, jun.; the second by Miss Caroline Lloyd; and the third by A. J. Wallis. In the examination on Dr. Odling's course, "On Elementary Chemistry," the first, second, and third prizes were carried off by H. Louis, A. J. Richardson, and Miss Eleanor F. Garrett. In the examination connected with the lectures "On the Theory of Music," delivered by Mr. E. J. Hopkins, the first prize was obtained by Alfred Hare, and the second by Miss Frances S. Voysey. In the examination on Prof. Bentley's course, "On the Classification of Plants," Miss Eleanor F. Garrett gained the first prize, Miss Elizabeth J. Garrett the second, and L. T. Thorne the third. Sixty-six Pass Certificates were granted, and no fewer than twenty-two young ladies were among the successful candidates.

We are glad to see from the report on the teaching of Practical Physiology in the London schools, which appears in the *Medical Times* of Saturday, that the means and method for teaching this subject to University College, the only one yet reported on, are in every way satisfactory.

Harper's Weekly records the death of Mr. Coleman T. Robinson, of New York, a gentleman well known for the attention he has paid to the subject of American lepidoptera. A man of wealth, and able to gratify his tastes in this direction, he acquired, by his own efforts and by purchase, a very extensive cabinet, embracing over twenty thousand specimens, which not long ago he presented to the American Museum of Natural History in the Central Park. Mr. Robinson published quite extensively upon American lepidoptera—a paper upon the sphinges of Cuba being perhaps the most important. In some of his labours he was associated with Mr. Grote.

We hear from America of the death of Mr. Robert Swift, who had paid great attention to terrestrial and marine mollusca. His valuable cabinet of shells will be presented by his daughter to the Philadelphia Academy of Sciences. He had already given to the Museum of the Smithsonian Institution an extensive series of specimens of the birds of St. Thomas and Porto Rico.

A monument has been erected to Boerhaave, the great naturalist and physician, at Leyden in Holland. The statue is 11 ft. 8 in. high, and stands on a pedestal of 10 ft. in height. The figure represents him as a professor lecturing.

We learn from the *Times of India* of June 28 that the *Madras Mail* and other journals in the Madras Presidency are altogether discontented with the recent judgment of the Court of Inquiry as to the cyclone, to which we referred last week. The *Mail* has subjected the judgment to a searching criticism, and, after comparing it with the evidence, concludes that the Court throughout has erred egregiously on the side of severity. It seems to be thought that the Board of Trade will either reverse or modify the Court's judgment.

Dr. E. Decaisne, in a note communicated to the Academy of Sciences on the 3rd of June, shows that from the triple point of view of the fecundity of marriages, of the absolute number of births, and of the excess of births over deaths, France occupies the lowest place of all the European States. In Prussia 100 marriages give 460 children; in France the same number of marriages give only 300 children. In Prussia the number of births for each 100 of the population generally is 3·98 per annum; in France there are only 2·55. In Prussia the excess of births over deaths in each million of the population is 13,000 per annum, whilst in France it only amounts to 2,400. "If we admit," says Dr. Decaisne, "as a conclusion from the above figures, that the doubling of the population of France, despoiled of two of its finest provinces, and by unheard of disasters, will require 170 years to be effected, whilst that of Prussia requires only 42 years, Great Britain 52, and Russia 66, some estimate may be made of the amount of the evil that has befallen this country." He does not hesitate to say that, as the first step towards the restoration of the former power of France, the first thing that should occupy her statesmen is the reconstitution, the reorganisation of human life; and everyone should throw aside that false patriotism which has been the cause of so much ill.

At its last session the Congress of the United States made an appropriation of 75,000 dollars for the continuation of Professor Hayden's geological exploration of the Territories; and on the 15th of June the Professor had already established his camp at Ogden, Utah, preparatory to prosecuting his researches. The present session seems likely to be marked by still further additions to our knowledge of the physical and natural history of the central and western regions of the United States.

According to the *Yale College Courant*, a new era in the educational development of the Japanese has been entered upon in the opening of an exhibition of curiosities of nature and art in Yedo in the beginning of April last. The formation of collections of this kind is usually characteristic of an advanced stage of culture; and in imitating the European and American example in this respect the Japanese show their great superiority to the Chinese and other Oriental nations. The exhibition referred to was opened in a temple sacred to the spirit of Confucius, and situated in the grounds of the old Chinese college. This institution was the chief seat in Japan of the study of Chinese literature, but has been closed for some years, as the study of the Chinese has now become obsolete. The exhibition, to which a charge for admission of about two cents was made, was projected by the Japanese themselves; and although small, yet, according to the writer in the *Courant*, it was really very good and well selected. The specimens were those mainly pertaining to the fauna and flora of Japan, embracing reptiles, fishes, insects, and birds, the last being well stuffed and mounted. Specimens of timber, in polished slabs, were exhibited; and the cases of insects were filled with a very great variety of species. To the wonders of nature were added numerous art curiosities, mainly of old and rare patterns of articles of lacquered bronze.

A correspondent of the *Chemical News* asks why the Cavendish Society has for years ceased to publish works of scientific value, and suggests that some of the works of its founders and officers—Faraday, Graham, Hofmann, Daubeny, Miller, Stenhouse—as well as others, are so scarce, that their publication by the Society would be a boon to many, and would remunerate it for its trouble in publishing them.

General Myer, the indefatigable head of the United States Signal Service, has proposed, according to *Harper's Weekly*, to take the occasion of various balloon ascensions during the present season, especially from Boston, to make observations in regard to the temperature, barometric pressure, and the currents of the higher altitudes of the atmosphere. Sergeant Schaeffer, of the corps, has been detailed for this purpose, and has been in training for some time preparatory to his important work.

We learn from the Fifth Annual Report of the Peabody Institute of Baltimore, for the year ending June 1, that upwards of 13,000 dollars have been spent on books and binding, and that during the year 120 lectures have been delivered at the Institute—30 being popular lectures, and 90 what are called class lectures, designed for more minute instruction in special branches of knowledge." Of the popular lectures Prof. W. H. Miles gave ten—mostly geological—on such subjects as "Revelations of the Microscope and of the Deep-Sea Soundings," "Coral and the Coral Islands," "Glaciers, Rivers, and Oceans," "The Geological History of Man," &c. The class lectures are divided into six courses, of which two are scientific—the one consisting of twenty lectures on Physiology by Prof. F. T. Miles, of Maryland University, and the other twenty lectures on Sound and Heat by Prof. H. C. White, of St. John's College, Baltimore. The average number in each class, independent of single admission, was thirty-seven, the charge for a course of twenty lectures being only 3 dols. During the year 3,883 volumes besides pamphlets have been added to the library, the number of readers having been 2,582.

Judging from the Report of the Exeter Science School in connection with the Government Department of Science and Art, it seems altogether in a very satisfactory condition. There are classes for Physical Geography, Mathematics, Acoustics, Light and Heat, Chemistry, Animal and Vegetable Physiology, Geology, Mineralogy, Metallurgy, Botany, Building Construction, Theoretical Mechanics, Machine Construction, and Drawing. From the number who have passed the examinations, it would appear that the classes must have been well attended, and several of the students have most creditably distinguished themselves.

The following is a list of the electric lights in England and France with the dates at which they were erected :—Dungeness, Jan. 1862 ; Cape La Heve, France, South Light, Dec. 1863 ; North Light, Nov. 1866 ; Cape Grisnez, France, Feb. 1869 ; Souter Point, England, Jan. 1871 ; South Foreland, 2 lights, Jan. 1872. It is interesting to see that England took the lead in this matter of the adaptation of electric illumination to lighthouse purposes, and it must also be remembered that although the first electric light was only erected in 1862, yet that in 1859 experiments were made under the supervision of the late Prof. Faraday which were very successful.

Mr. William F. Denning, of Bristol, writes us that the sun's surface has recently been in a very disturbed condition. On observing the sun on the afternoon of the 12th instant with an old 4in. metallic-mirror reflecting telescope, he noticed a large scattered group of spots in the north-eastern quadrant of the disc. This group contained no less than twenty-seven individual spots, one of which was of considerable dimensions. It was situated on the eastern portion of the group, and was constituted of three well-defined umbræ and a large irregular penumbra, which on the east side was very dark, and on the exterior edge pierced with a train of minute dark spots. In the other quadrants Mr. Denning noticed four groups and one isolated spot surrounded by penumbra in the north-western quadrant. These groups (though insignificant in regard to the dimensions of the spots which composed them) contained twenty-one spots in all ; so that, including the large cluster before referred to, there were forty-eight dark spots seen altogether. Several groups of faculæ were also perceptible in the vicinity of the margin of the disc.

The first number of the *Journal of the Society of Telegraph Engineers* contains, besides a list of members, and the rules and regulations, a record of the proceedings of the Society since its formation, including reports of the papers read, and the discussions which followed. The members already number about 280, and among them are the names of some of the most eminent scientific men of the time, the President being Charles W. Siemens, and the Vice-Presidents Lord Lindsay and Frank I. Scudamore, C.B. The society "is established for the general advancement of Electrical and Telegraphic Science, and more praticularly for facilitating the exchange of information and ideas among its members," and consists of members, associates, students, and honorary members. Besides the President's address, in which he justly maintains that such a special society "is necessary for the more rapid development of a new and important branch of applied science," the report contains a paper by Mr. R. S. Culley on Automatic Telegraphs, and a sketch of the Progress of Sea Telegraphy by Captain Colomb, R.N. The latter half of the volume consists of "Abstracts and Extracts," bearing on the department with which the society is concerned.

A novel kind of magazine has made its unpretending appearance—*Loose Leaves*, a magazine conducted at the Church Stretton Private Asylum. It is written almost entirely by members of the asylum, and we have seen many madder publications proceeding from those who consider themselves sane. As an effort to occupy the minds of the unfortunate inmates of such establishments, the attempt is commendable, and worthy of all success and imitation.

HISTORICAL ECLIPSES

Mr. J. R. HIND, writing from Mr. Bishop's Observatory, Twickenham, to the *Times*, supplies the following interesting sketch of the Eclipses recorded in History :—

"It is well understood that the historical eclipses, especially those of the sun, have an important bearing upon our knowledge of the elements of the moon's motion, as affording the means of testing the accuracy of those elements when carried back to very remote times. I send you a brief account of some results I have deduced in a systematic examination of these eclipses, making only such a selection therefrom as may possibly possess interest for the general reader. I shall omit any reference to the purely astronomical conclusions to which I have been led, which would be out of place in your columns, and, indeed, would extend this communication beyond reasonable limits. It may, however, be desirable to state that I have employed the last value of the secular acceleration of the moon's mean motion given by Prof. Hansen, of Gotha, the author of the latest lunar tables, and have combined other important elements as determined by him with the results of M. Leverrier's tables of the sun. From recent investigations it appears by no means improbable that we may have to rely wholly upon the ancient eclipses in fixing the true amount of acceleration in the motion of our satellite.

"I shall follow the chronological order in the subjoined remarks upon some of the better known eclipses of history. These form a part only of the phenomena I have rigorously examined upon the same system of calculation.

"1. The Nineveh Eclipse of B.C. 763, June 15.—The discovery of the record of this eclipse on one of the Nineveh tablets in the British Museum was announced by Sir Henry Rawlinson in the *Athenæum* of May 18, 1867, to which I refer for details of its bearing on the sacred and profane history of the period. In the actual state of our knowledge it is the *terminus à quo* for researches on the historical eclipses, and I believe I am correct in saying its value in an astronomical point of view is greater than that attaching to the famous eclipse predicted by Thales to the Ionians, as mentioned by Herodotus. The underlining of the inscription appears to indicate a phenomenon of unusual character, or that the eclipse was total in or near Nineveh. Adopting for the position of the city the longitude and latitude deduced by the Astronomer Royal for the pyramid of Nimrud, I find the calculated southern limit of totality would pass a few miles south of Nineveh, leaving a very large partial eclipse at that city. Very trifling corrections in the lunar elements employed would suffice to bring the total eclipse over it. In this longitude the duration of totality on the central line would be 4m. 20s., the middle of the eclipse at half-past 9 local time.

"2. The Eclipse of B.C. 689, January 11.—The idea that the retrogression of the shadow on 'the dial of Ahaz' during the illness of Hezekiah may have been connected with a solar eclipse has given rise to much discussion, and several writers have endeavoured to point out how the occurrence might thus be explained. Of the eclipses to which attention has been directed, the above has perhaps appeared the more probable. It was an annular eclipse, and at Jerusalem the sun would present the form of a luminous ring for 7½ minutes, the middle at 10h. 18m. In Babylon it would have the same appearance for seven minutes. It seems hardly probable that the eclipse could have occurred much later in the day, though more than one author has considered the circumstance essential for the explanation of the retrograde motion of the shadow on the ancient form of sun-dial by an eclipse. I must leave the reader to judge how far the expression 'the wonder done in the land' may relate to such a phenomenon, which is, of course, a very rare one in a particular locality.

"3. The eclipse of Thales, B.C. 585, May 28.—This eclipse, which, as Herodotus informs us, terminated the six years' war between the Medes and Lydians under Cyaxares and Alyattes, when during a battle 'day was suddenly turned into night,' has greatly exercised the chronologist and the astronomer, and although, misled by imperfect tables of the lunar motions, they have fixed upon other eclipses from time to time, it has been known for some years past that the date distinctly assigned by Pliny (the fourth year of the 48th Olympiad) is the correct one. My new calculation throws the shadow precisely over the tract of country where with the greatest probability it has been supposed the contending armies were situated, and in addition it indicates a circumstance which I believe has not resulted from any previous calculation, and which may not be without its